NC/QC/YD/2020-21/ML-GSB1 Date: 15-07-2020

TEST REPORT ON GRANULAR SUBBASE MIX
(GRADATION TEST)

Sub: To conduct tests on GSB (Grade-V) mix.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

1. **Gradation Test:**
TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
75.00	100.00	100
53.00	97.35	80-100
26.50	82.05	55-90
9.50	58.15	35-65
4.75	42.90	25-50
2.36	16.40	10-20
0.85	7.65	2-10
0.425	3.80	0-5

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EMAIL:newzen576@gmail.com

Date: 15-07-2020

TABLE 1.2

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)– 1963 (Reaffirmed on 2002) & Requirements as per IS 383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Water absorption, %	0.41 %	Not more than 2.0 %
2.	Liquid Limit, %	18.36	Not more than 25.0 %
3.	Plasticity Index, %	NP	Not more than 6.0 %
4.	Moisture Content, %	6.58	----------
5.	Aggregate Impact Value, %	28.76	Not more than 40.00 %

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NC/QC/YD/2020-21/ML-W1 Date: 20-07-2020

TEST REPORT ON WET MIX MACADAM MIX

(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	**100.00**	100
45.00	**97.45**	95-100
26.50	**---**	-
22.40	**76.10**	60-80
11.20	**52.05**	40-60
4.75	**34.45**	25-40
2.36	**24.80**	15-30
0.600	**18.60**	8-22
0.075	**3.40**	0-5

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NC/QC/YD/2020-21/ML-W2

Date: 24-07-2020

TEST REPORT ON WET MIX MACADAM MIX
(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

1. Gradation Test:
TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	97.35	95-100
26.50	---	-
22.40	73.05	60-80
11.20	51.80	40-60
4.75	34.10	25-40
2.36	27.95	15-30
0.600	16.15	8-22
0.075	3.25	0-5

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EMAIL:newzen576@gmail.com

Date: 24-07-2020

TABLE 1.2

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)– 1963 (Reaffirmed on 2002) & Requirements as per IS 383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	27.96%	Not more than 30.00 %
2.	Combined Flakiness and Elongation index, %	28.65%	Not more than 35.0 %
3.	Water absorption, %	0.42 %	Not more than 2.0 %
4.	Plasticity Index, %	NP	Not more than 6.0 %

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EMAIL:newzen576@gmail.com

NC/QC/YD/2020-21/ML-BD1 Date: 19-08-2020

1. TEST REPORT ON BITUMEN SAMPLE:

Sub: Testing of Bitumen sample VG-30 Grade.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.
Technical Reference: Ministry of Road Transport and Highways, V Revision, 2013 and IS 73: 1992.

TABLE 1.1 ;

SL No	Details	Test Results	Requirements as per I.S 73 –1992 Specifications
1.	Penetration at 25^0 C	**52.90^0 C**	Min. 45
2.	Ductility Value at 25^0 C	**108.90 cm**	40
3.	Flash point	**246^0 C**	Minimum 220^0 C
4.	Softening point	**51.40^0 C**	Min. 47

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EMAIL:newzen576@gmail.com

NC/QC/YD/2020-21/ML-CD1 **Date: 19-08-2020**

1. TEST REPORT ON COARSE AGGREGATE:

Sub: Testing of Coarse Aggregate used in Dense Graded Bituminous Macadam.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TABLE 1.1 ;

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)– 1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**23.19%**	Not more than 27 00 % for DBM
2.	Combined Flakiness and Elongation index, %	**26.74%**	Not more than 35.0 %
3.	Water absorption, %	**0.42%**	Not more than 2.0 %
4.	Specific gravity	**2.62**	-------
5.	Soundness	**6.56 %**	Max. 12 % in Sodium Sulphate

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NC/QC/YD/2020-21/ML-DBM1 Date: 24-08-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.53 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	100	100
26.5	94.15	90-100
19.0	81.30	71-95
13.20	75.05	56-80
4.75	52.80	38-54
2.36	34.75	28-42
0.300	18.10	7-21
0.075	6.25	2-8

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EMAIL:newzen576@gmail.com

NC/QC/YD/2020-21/ML-DS1 Date: 25-08-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	1238	900
2	Marshall Flow at 60°C, mm.	3.26	2.0 - 4.0

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NC/QC/YD/2020-21/ML-DBM2 **Date: 25-08-2020**

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.52 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	100	100
26.5	94.60	90-100
19.0	82.35	71-95
13.20	75.40	56-80
4.75	50.15	38-54
2.36	32.90	28-42
0.300	17.35	7-21
0.075	7.05	2-8

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NC/QC/YD/2020-21/ML-DS2

Date: 26-08-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	1245	900
2	Marshall Flow at 60°C, mm.	3.32	2.0 - 4.0

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NC/QC/YD/2020-21/ML-BB1

Date: 21-08-2020

1. TEST REPORT ON BITUMEN SAMPLE:

Sub: Testing of Bitumen sample VG-30 Grade.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.
Technical Reference: Ministry of Road Transport and Highways, V Revision, 2013 and IS 73: 1992.

TABLE 1.1 ;

SL No	Details	Test Results	Requirements as per I.S 73 –1992 Specifications
1.	Penetration at 25^0 C	51.40^0 C	Min. 45
2.	Ductility Value at 25^0 C	107.0 cm	40
3.	Flash point	237^0 C	Minimum 220^0 C
4.	Softening point	50.80^0 C	Min. 47

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Date: 28-08-2020

NC/QC/YD/2020-21/ML-BC1

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for BC mix sample.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

A. Type of Construction : **Bituminous Concrete**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **5.41 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-17 of MORTH Specfications-2013 BC (Grading - 2)
19.0	100	100
13.2	93.25	90-100
9.5	85.10	70-88
4.75	68.90	53-71
2.36	52.65	42-58
1.18	44.85	34-48
0.600	31.60	26-38
0.300	24.10	18-28
0.150	17.40	12-20
0.075	855	4-10

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NEW TECHNOLOGIES TO INNOVATE

NC/QC/YD/2020-21/ML-BS1 **Date: 29-08-2020**

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for BC mix sample.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

Table 1: Properties of BC (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Bituminous Concrete, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	1368	900
2	Marshall Flow at 60°C, mm.	3.54	2.0 - 4.0

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NEW TECHNOLOGIES TO INNOVATE

NC/QC/YD/2020-21/ML-BS2 **Date: 31-08-2020**

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for BC mix sample.
{Project*: Improvements to Cross roads at Muneshwara Layout in ward no 03.}
Ref.: Material testing/QC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Satellite Town Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. R. Rangaswamy, Bangalore.

TEST RESULTS

Table 1: Properties of BC (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Bituminous Concrete, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1352**	900
2	Marshall Flow at 60°C, mm.	**3.40**	2.0 - 4.0

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